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The Energy Future: Strategies and Challenges
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I am very pleased to be here today. I would like to thank the Federation of Electric Power Companies of Japan and Washington Policy & Analysis for hosting this important discussion on nuclear power and the importance of our U.S-Japanese strategic partnership.

I would also like to thank this most distinguished and powerful group of energy executives and leaders for taking precious time out of your schedules to travel to the U.S. to share with us your perspectives on the future of nuclear energy. Also, I would like to thank Bill Martin for his work on behalf of our two countries in promoting this dialogue and for sponsoring this event. Bill leads the Department's Nuclear Energy Research Advisory Committee and we value his counsel. I actually had the pleasure of first meeting Bill Martin while traveling in Japan.

The United States and Japan have a long-standing and strong relationship of cooperation, collaboration and consultation that is based in large part on our shared values of energy security and economic prosperity. Our unique relationship promises to be even more important as we go forward in the future and seek to develop a new generation of nuclear technologies – technologies that are safer, more reliable, sustainable, and more proliferation resistant -- complete energy systems that allow us to recycle and reuse our valuable nuclear fuel resources. As key partners in the *Generation IV International Forum*, we also look forward to building on the foundation of the last thirty years of bi-lateral cooperation as we jointly move forward on this very important multi-lateral effort.

The U.S. is committed to encouraging new investment in electricity generation today and in developing advanced nuclear energy systems for the future. Nuclear power remains one of the United States' most important sources of electricity. Of all our Nation's energy sources, only nuclear power can generate large amounts of electricity without emitting air pollution or greenhouse gases. And thanks to advances in science and technology and the hard work of industry in improving the operation of the U.S. reactor fleet, nuclear plants are safe, cost-effective, and reliable sources of clean electricity. Yet, unlike Japan, the U.S. has not had an order for a new plant since the 1970's - largely because of the regulatory and financial risks.

This past August, the U.S. made a significant step forward when President Bush signed into law the first comprehensive energy legislation in more than a decade – the Energy Policy Act of 2005. This legislation encourages energy efficiency and conservation, promotes alternative and renewable energy sources, reduces dependence on foreign sources of energy, increases domestic production, modernizes the grid, and through a host of provisions specific to nuclear power, the Act encourages building new nuclear generating capacity and developing next generation reactor and fuel cycle technologies.

The nuclear provisions contained in this landmark legislation provide the foundation for building a new generation of light water reactors in the U.S. in this decade and for pursuing an advanced nuclear energy pathway that addresses the proliferation and spent fuel challenges for expanded use of nuclear energy around the world. Specifically, the Act authorizes full funding for our *Nuclear Power 2010* initiative, a cost-shared partnership between industry and government to demonstrate key untested regulatory processes, identify new sites to locate nuclear power plants and complete first of a kind engineering. This program – to enable near-term deployment of new nuclear plants in the U.S. -- is one of the highest priorities for the Department. We have cooperative agreements in place with two consortia – NuStart Energy LLC, comprised of nine generating companies and two reactor vendors and Dominion Energy. Both consortia have indicated plans to submit applications to the Nuclear Regulatory Commission for combined Construction and Operating Licenses within the next two years.

Along with this, a key initiative of the Energy Policy Act is the "Standby Support" program, which is a form of risk insurance that offsets the financial impact of delays to nuclear plant operations that are beyond the control of the plant's sponsors. This support would provide coverage for the cost of delays for "first movers" to reduce their financial risk. The "Standby Support" program is *also* a key priority for the Department and we are working hard on the regulatory framework to be issued next year that will allow the government to provide this type of support.

With these efforts, we are optimistic that we will see ground broken for new nuclear plants ion the United States by the end of the decade. As we develop our plans for building new plants, it is also our hope that U.S. industry will seek to benefit from Japan's experience with modular design and construction, reduced construction times, use of state-of-the-art I&C as well as your experience operating the advanced boiling water reactors. Japan has set a new standard for construction of new nuclear plants – demonstrating that a new plant can be successfully constructed in four years.

Another key issue for the U.S. to address is re-establishing our nuclear industrial base, particularly as it relates to manufacturing of nuclear grade forgings, vessels, turbine generators and other large reactor components. Perhaps as demand for new nuclear generating capacity increases, this will promote partnerships between the U.S. and Japan that will result in re-establishing a manufacturing capability here in the United States. Also, as the U.S. and Japanese nuclear industry seeks to open markets in Asia, including China's civilian nuclear power development program, opportunities may exist for increased industrial cooperation. By working together, we can promote safe and secure nuclear power development in China and the developing countries of Asia.

As we look to the future through our *Generation IV* and *Advanced Fuel Cycle Initiatives*, the U.S. is working to accelerate the development, demonstration and deployment of advanced nuclear energy systems, including demonstration of advanced fuel recycling capabilities. We believe that significant benefit can be gained by the U.S. and Japan working together on these technologies, sharing resources, expertise, and research facilities.

Let me briefly share with you the direction of U.S. research and development and some key areas of ongoing and future cooperation.

Last year, the U.S. signed an International Nuclear Energy Research Initiative Agreement with Japan's Ministry of Economy, Trade and Industry – METI – and more recently, a second agreement was signed with Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT). These are the foundation for our work together on advanced nuclear technologies and it is my hope that we will expand these agreements as we go forward in the future. I would also note that the U.S. and Japan were among the first nations to sign the Generation IV Intergovernmental Framework Agreement this past February. This agreement is essential to moving forward with collaborative R&D on Generation IV energy systems.

Presently, the International-NERI agreements enable collaboration between our countries in the areas of very high temperature reactors and nuclear production of hydrogen, two key research priorities for the Department. With the experience of Japanese researchers in gas-cooled reactors and laboratory-scale hydrogen production, our efforts could be accelerated through greater collaboration.

Other areas of possible future cooperation are in development of additional advanced reactor technologies, such as small, proliferation resistant reactors with long lived cores. One such reactor that we have modestly invested in is the small lead cooled fast reactor concept. We have coordinated this R&D on long lived cores with the work that CREIPE and Toshiba are doing on their 4S sodium cooled reactor – which is also a small modular reactor. Cooperative R&D in this field has been underway for about three years now. Through this research, we have identified a number of areas for further cooperation, including the use of super-critical CO2 for the balance of plant, which would apply to both sodium and lead cooled reactor technologies.

Other key areas for cooperation are fuels development and materials research for advanced reactor systems. Like the 1980's when the U.S. and Japan sponsored cooperative irradiations in the Fast Flux Test Facility, today, a tri-party Implementing Arrangement with France and Japan, signed in August 2004, paves the way to work together on transmutation fuels for advanced fast reactors. This tri-partite cooperation includes a joint project to irradiate minor actinide transmutation fuel pins in the French PHENIX fast reactor during the last two years of its operation. We also hope to continue this important fuels and materials research collaboration through the establishment of a new tri-party research agreement to allow the use of Japan's JOYO research reactor and, hopefully, the MONJU reactor. The continued availability of these facilities for testing of advanced reactor fuels is of great benefit to our respective programs.

Finally, a critical area of cooperation between our two countries is in nuclear nonproliferation. Japan is the United States' most important security partner in Asia. Nonproliferation is a key shared value for both our countries and Japan has demonstrated leadership in nonproliferation in Asia and around the world. We recognize the state-of-the-art instrumentation and safeguards that have been incorporated into the new processing facility at Rokkasho that will soon begin testing and operation.

Clearly, Japan's commitment to the very best instrumentation and inspection systems for monitoring and protection of nuclear materials has set a new standard for nuclear safeguards globally – a standard that will be very important to our work on next generation technologies.

As you know, the U.S. is conducting research on both aqueous and non-aqueous spent fuel recycle technologies. The aqueous URanium EXtraction (UREX) plus technology is expected to be most useful for recycling light water reactor fuel and the non-aqueous pyroprocessing technology is expected to be more suitable for recycling Generation IV fast reactor fuels. However, in order to fully demonstrate the viability of these technologies, substantially more research and development is needed and we welcome the opportunity to develop a closer research dialogue with Japan in these areas.

These are very exciting times for nuclear power in the United States and around the world. Let me close by saying that as our domestic nuclear programs gain momentum, close, continued cooperation with Japan in the development of nuclear energy technologies is essential and the United States welcomes expanded cooperation with Japan now and into the future.